FIG. 1

NUMBER OF CONNECTION POINTS	WIRE RESISTANCE VALUE	WIRE CAPACITANCE VALUE
2	10	100
3	20	150
4	50	260
5	80	350
6	100	500
:	:	:
:	:	:

FIG. 2

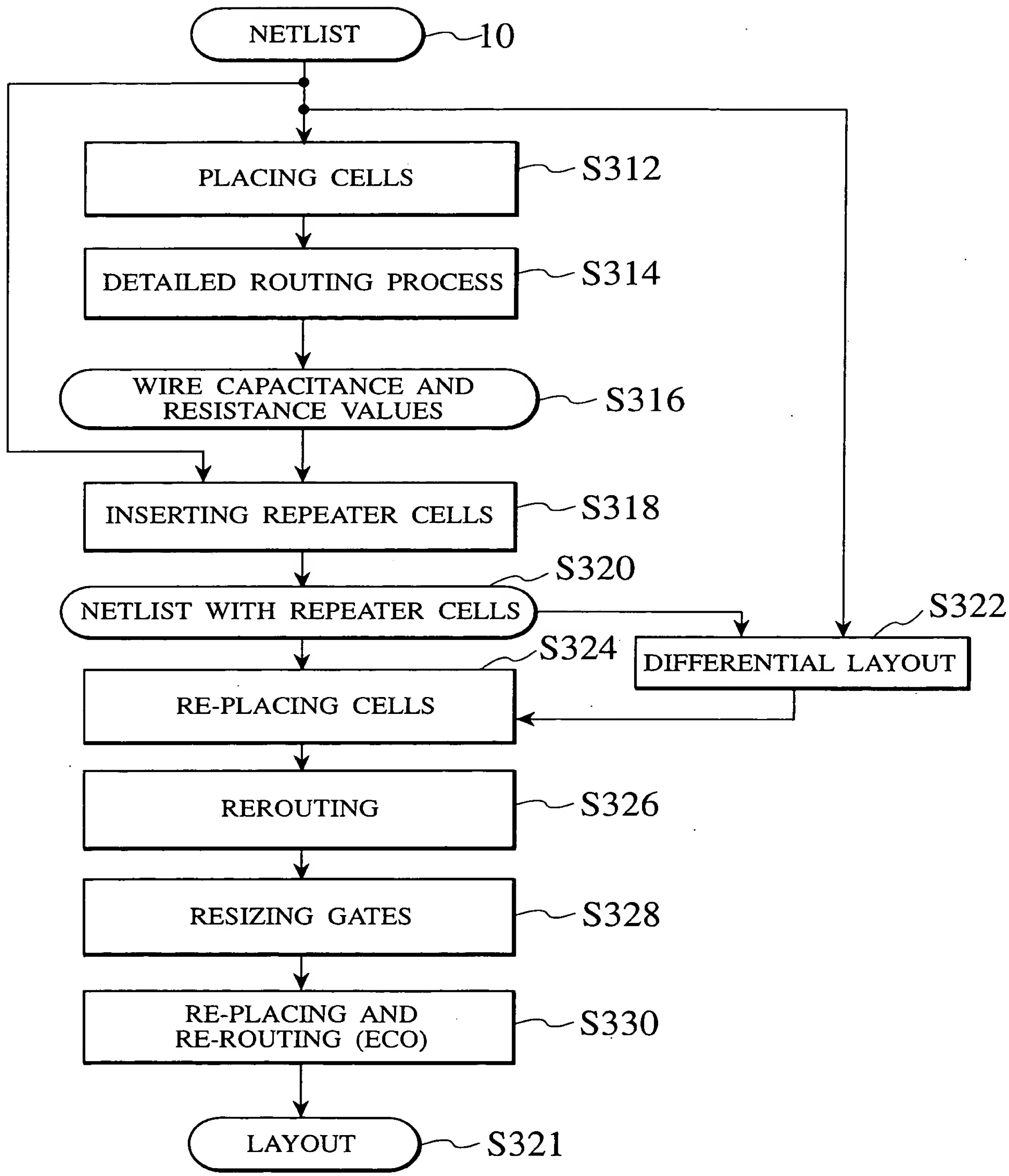
NETLIST
10
PLACING CELLS
S312
DETAILED ROUTING PROCESS
S314
WIRE CAPACITANCE AND RESISTANCE VALUES
S316
INSERTING REPEATER CELLS
S318
S320
NETLIST WITH REPEATER CELLS
S322
DIFFERENTIAL LAYOUT
S324
RE-PLACING CELLS
REROUTING
S326
RESIZING GATES
S328
RE-PLACING AND RE-ROUTING (ECO)
S330
LAYOUT
S321

FIG. 3

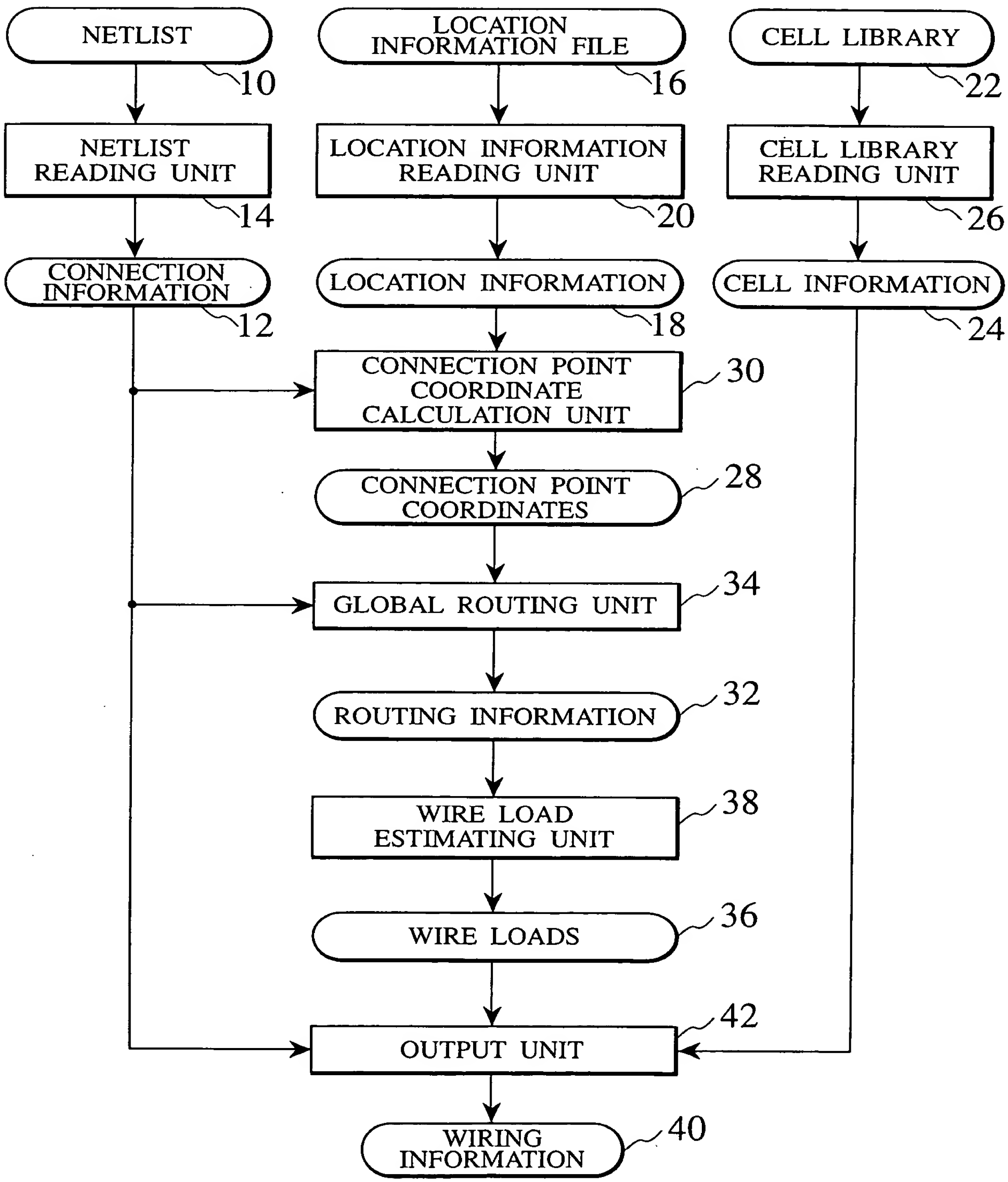

FIG. 4

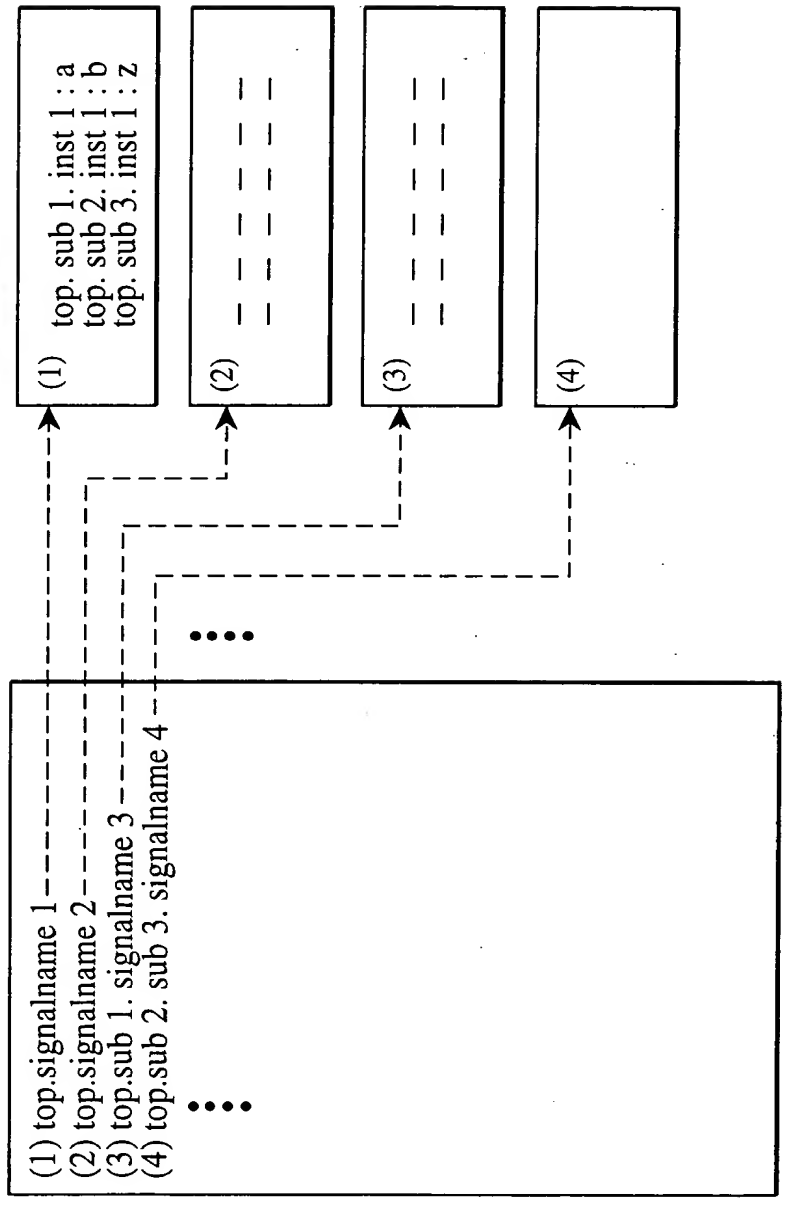

FIG. 5

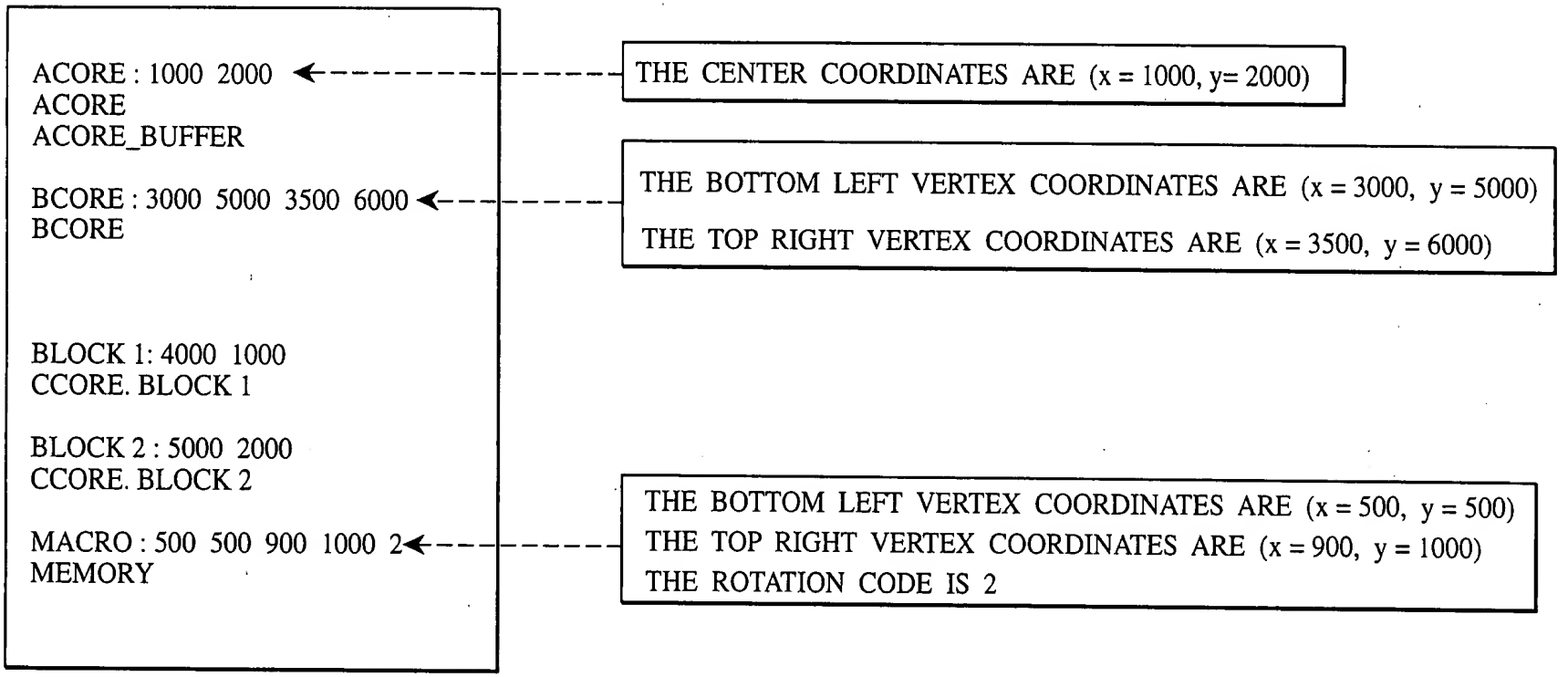
ACORE : 1000 2000
ACORE
ACORE_BUFFER
BCORE : 3000 5000 3500 6000
BCORE
BLOCK 1: 4000 1000
CCORE. BLOCK 1
BLOCK 2 : 5000 2000
CCORE. BLOCK 2
MACRO : 500 500 900 1000 2
MEMORY
THE CENTER COORDINATES ARE (x = 1000, y= 2000)
THE BOTTOM LEFT VERTEX COORDINATES ARE (x = 3000, y = 5000)
THE TOP RIGHT VERTEX COORDINATES ARE (x = 3500, y = 6000)
THE BOTTOM LEFT VERTEX COORDINATES ARE (x = 500, y = 500)
THE TOP RIGHT VERTEX COORDINATES ARE (x = 900, y = 1000)
THE ROTATION CODE IS 2

FIG. 6

ROTATION CODE

0: NO ROTATION
2: ROTATION OF 90 DEGREES IN THE LEFT DIRECTION
4: ROTATION OF 180 DEGREES
6: ROTATION OF 90 DEGREES IN THE RIGHT DIRECTION
12: MIRROR-IMAGING AROUND THE x-DIRECTION
8: MIRROR-IMAGING AROUND THE y-DIRECTION
10: MIRROR-IMAGING AROUND THE x-DIRECTION FOLLOWED BY ROTATION OF 90 DEGREES IN THE LEFT DIRECTION
14: MIRROR-IMAGING AROUND THE x-DIRECTION FOLLOWED BY ROTATION OF 90 DEGREES IN THE RIGHT DIRECTION

FIG. 7

NAME OF BLOCK	NAME OF PIN	x-COORDINATE AND y-COORDINATE	
MEMORY 1	A0	100	0
MEMORY 1	A1	200	0
MEMORY 1	A2	300	0
⋮			
MEMORY 2	A0	0	100
MEMORY 2	A1	0	200

FIG. 8

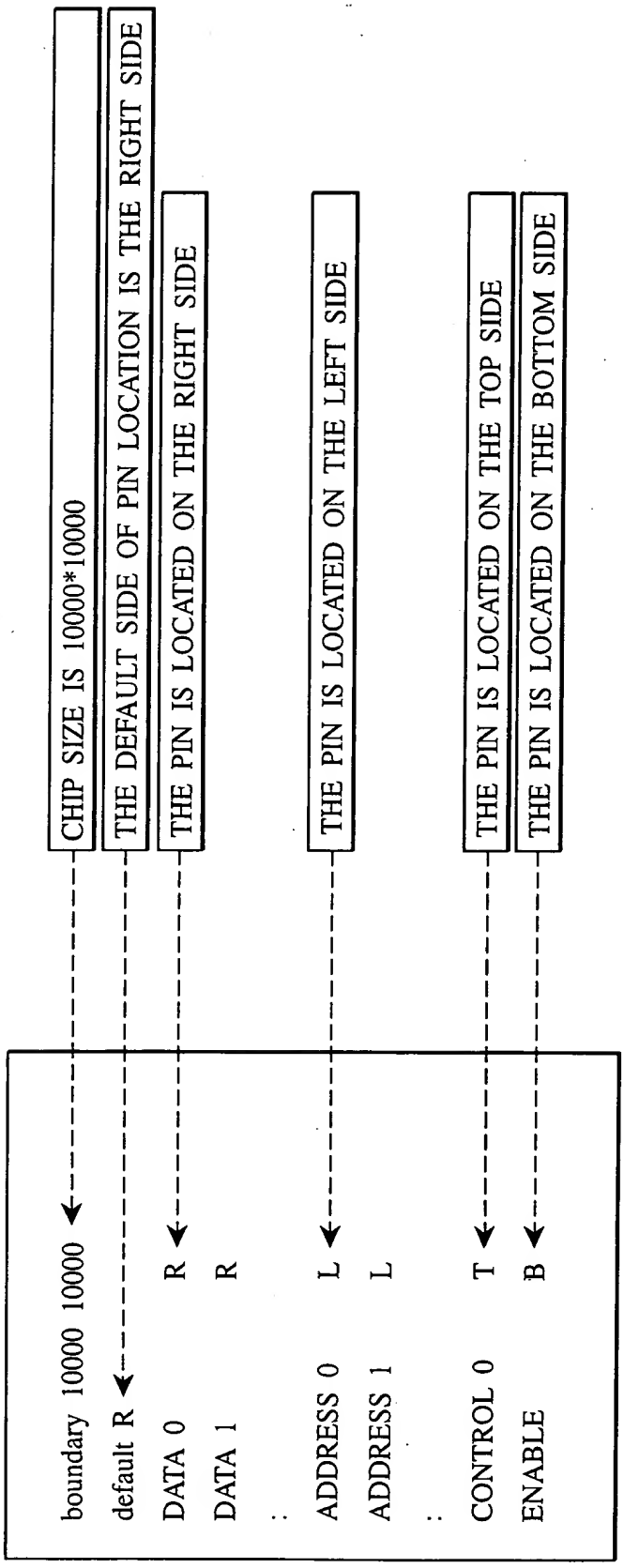
boundary 10000 10000
default R
DATA 0 R
DATA 1 R
:
ADDRESS 0 L
ADDRESS 1 L
:
CONTROL 0 T
ENABLE B
CHIP SIZE IS 10000*10000
THE DEFAULT SIDE OF PIN LOCATION IS THE RIGHT SIDE
THE PIN IS LOCATED ON THE RIGHT SIDE
THE PIN IS LOCATED ON THE LEFT SIDE
THE PIN IS LOCATED ON THE TOP SIDE
THE PIN IS LOCATED ON THE BOTTOM SIDE

FIG. 9

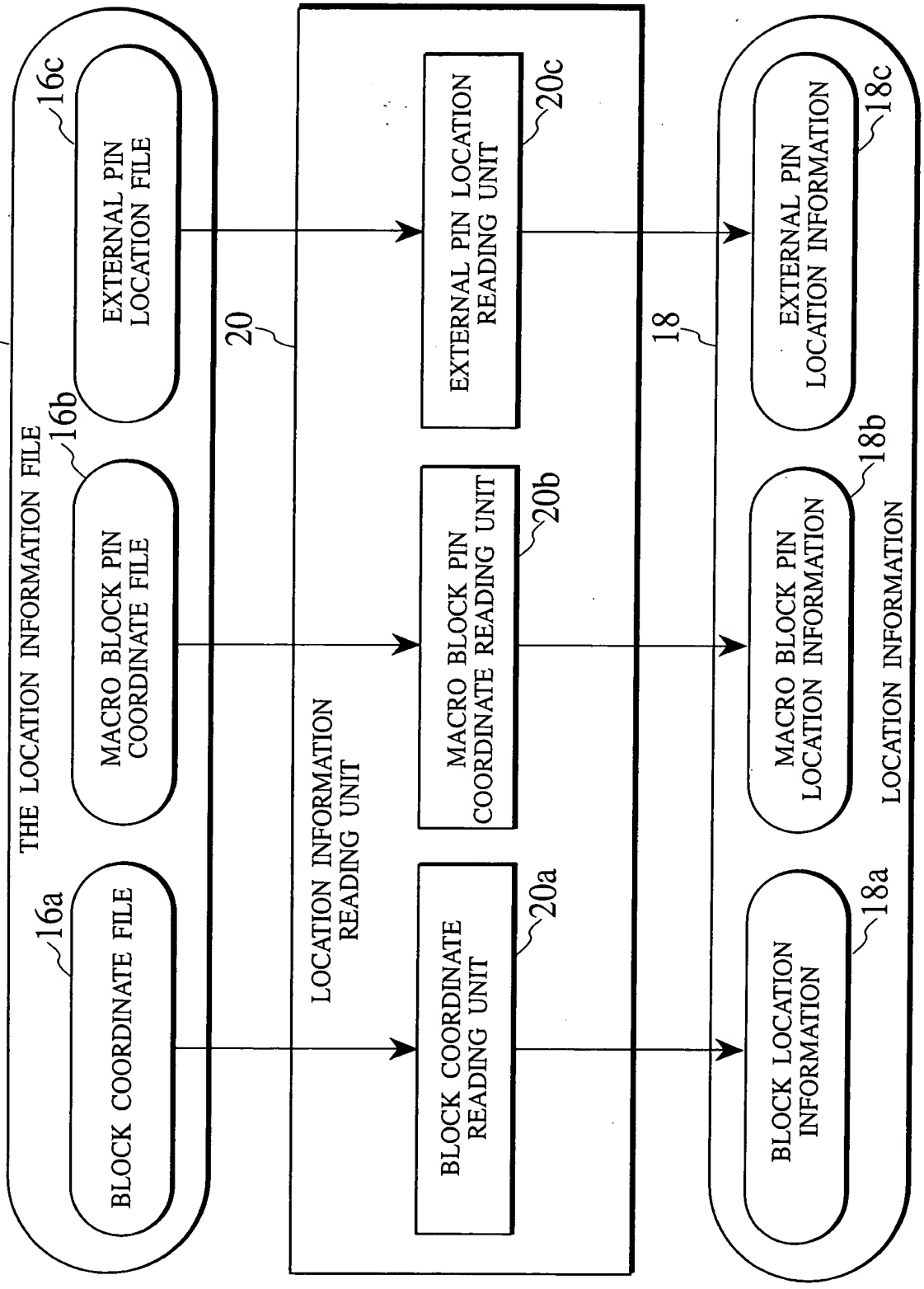
16
THE LOCATION INFORMATION FILE
16a
BLOCK COORDINATE FILE
16b
MACRO BLOCK PIN COORDINATE FILE
16c
EXTERNAL PIN LOCATION FILE
20
LOCATION INFORMATION READING UNIT
20a
BLOCK COORDINATE READING UNIT
20b
MACRO BLOCK PIN COORDINATE READING UNIT
20c
EXTERNAL PIN LOCATION READING UNIT
18
LOCATION INFORMATION
18a
BLOCK LOCATION INFORMATION
18b
MACRO BLOCK PIN LOCATION INFORMATION
18c
EXTERNAL PIN LOCATION INFORMATION

FIG. 10

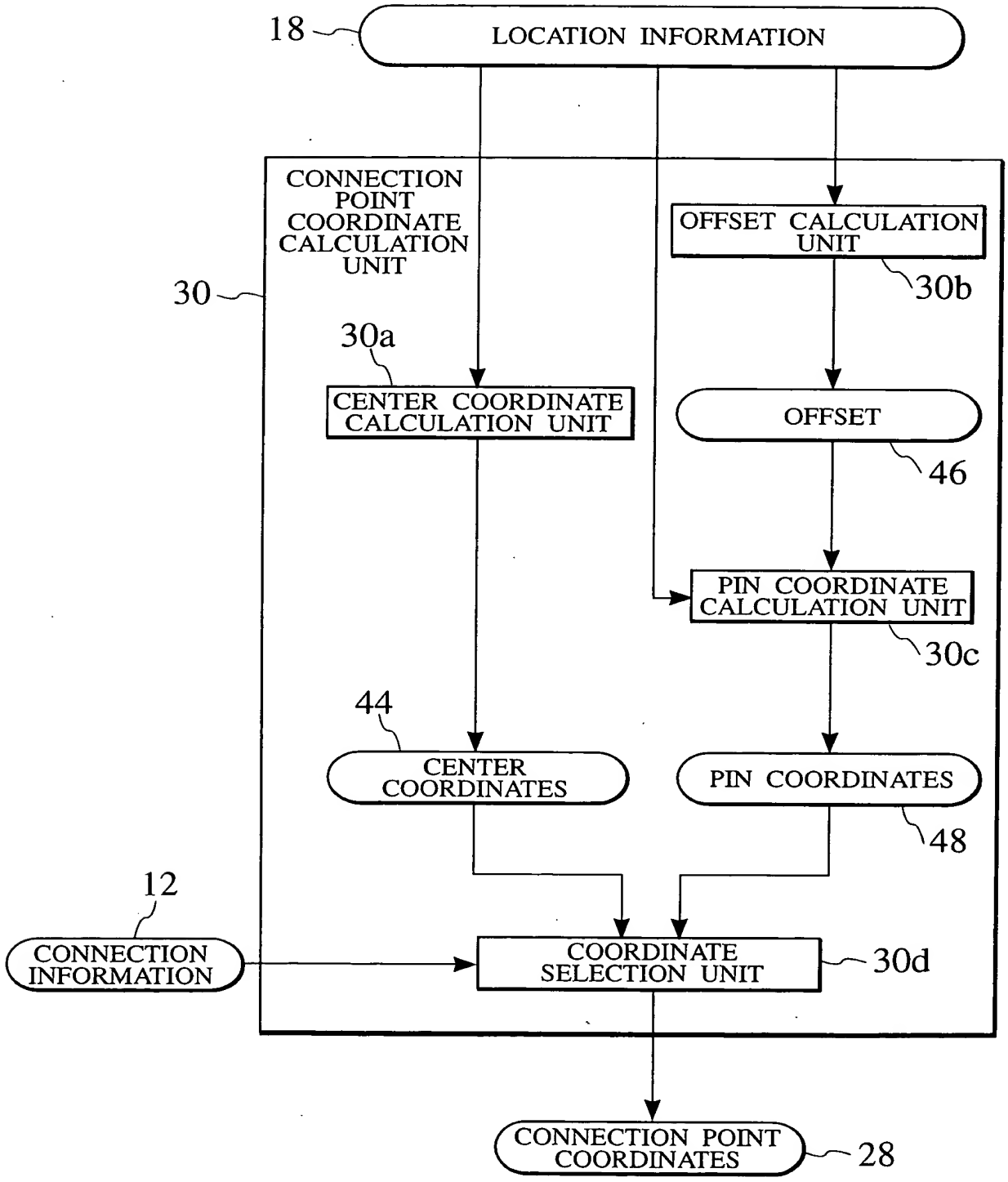
18
LOCATION INFORMATION
CONNECTION POINT COORDINATE CALCULATION UNIT
30
OFFSET CALCULATION UNIT
30b
30a
CENTER COORDINATE CALCULATION UNIT
OFFSET
46
PIN COORDINATE CALCULATION UNIT
30c
44
CENTER COORDINATES
PIN COORDINATES
48
12
CONNECTION INFORMATION
COORDINATE SELECTION UNIT
30d
CONNECTION POINT COORDINATES
28

FIG. 11

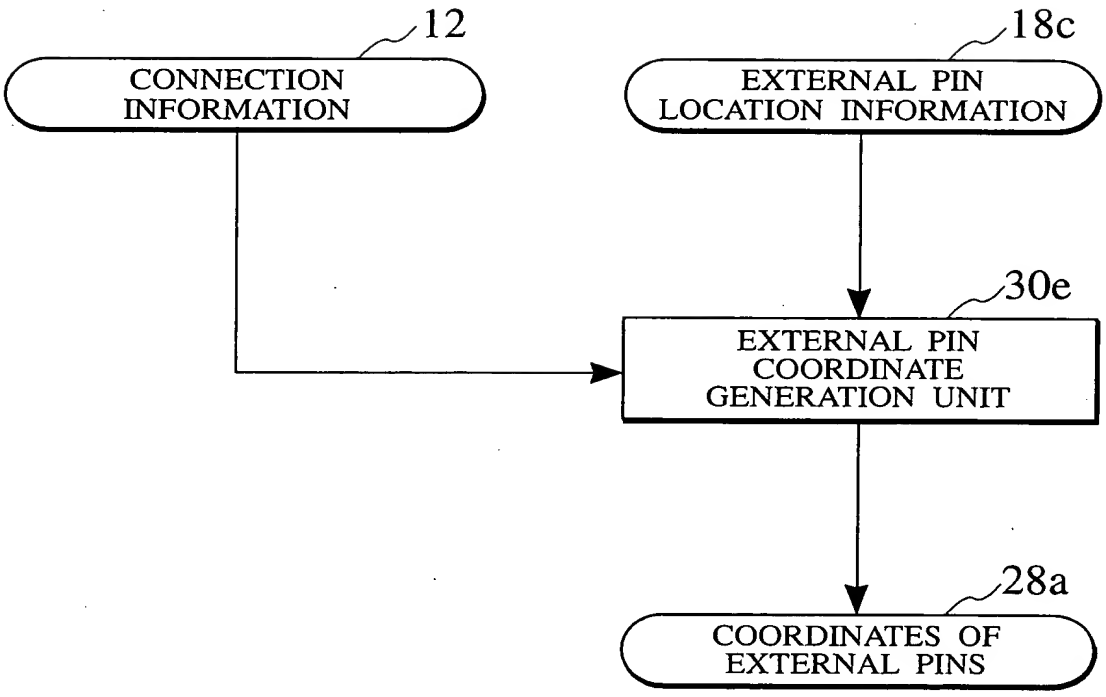
12
CONNECTION INFORMATION
18c
EXTERNAL PIN LOCATION INFORMATION
30e
EXTERNAL PIN COORDINATE GENERATION UNIT
28a
COORDINATES OF EXTERNAL PINS

FIG. 12

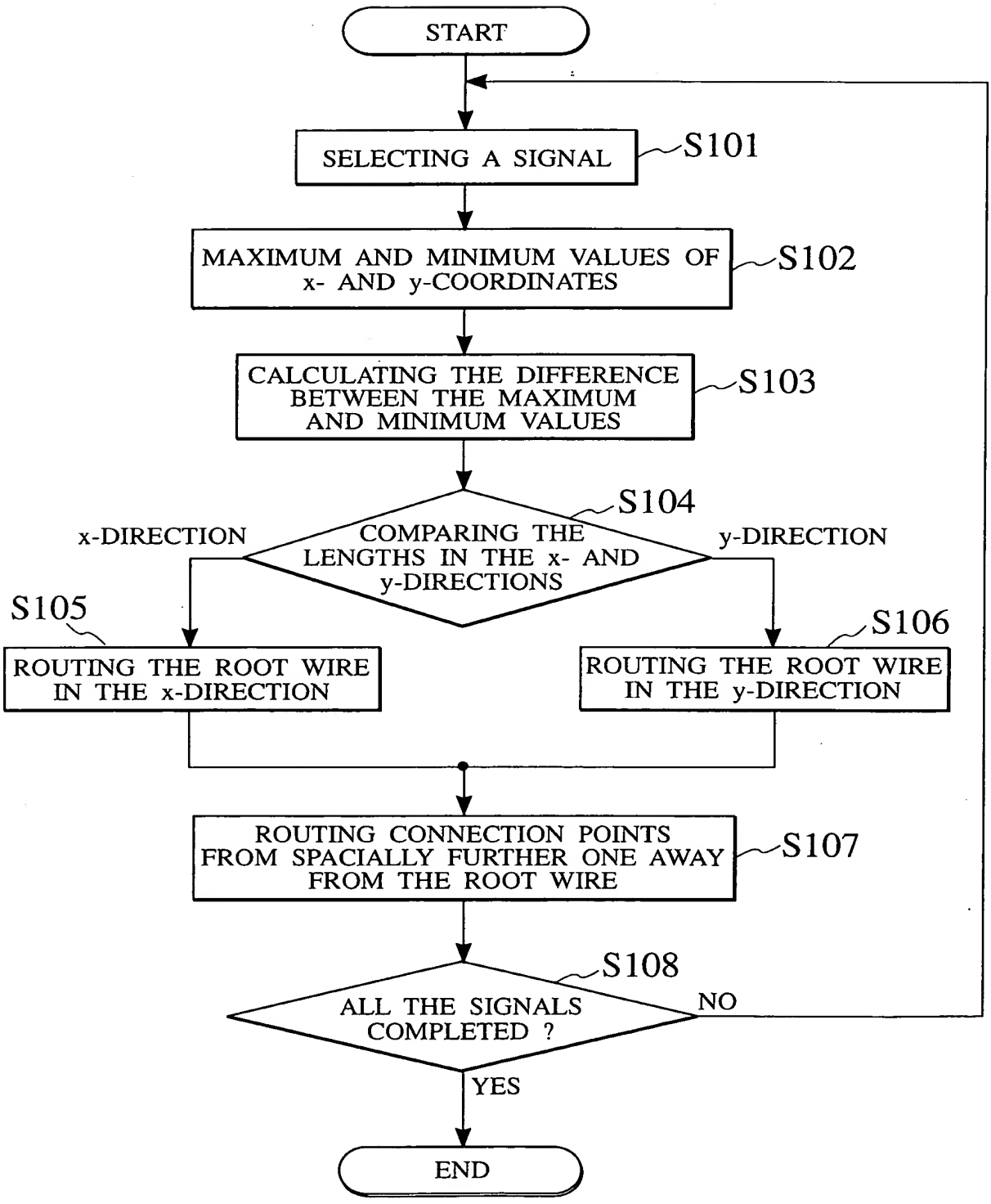
START
SELECTING A SIGNAL
S101
MAXIMUM AND MINIMUM VALUES OF x- AND y-COORDINATES
S102
CALCULATING THE DIFFERENCE BETWEEN THE MAXIMUM AND MINIMUM VALUES
S103
S104
COMPARING THE LENGTHS IN THE x- AND y-DIRECTIONS
x-DIRECTION
y-DIRECTION
S105
ROUTING THE ROOT WIRE IN THE x-DIRECTION
S106
ROUTING THE ROOT WIRE IN THE y-DIRECTION
ROUTING CONNECTION POINTS FROM SPACIALLY FURTHER ONE AWAY FROM THE ROOT WIRE
S107
S108
ALL THE SIGNALS COMPLETED ?
NO
YES
END

FIG. 13A

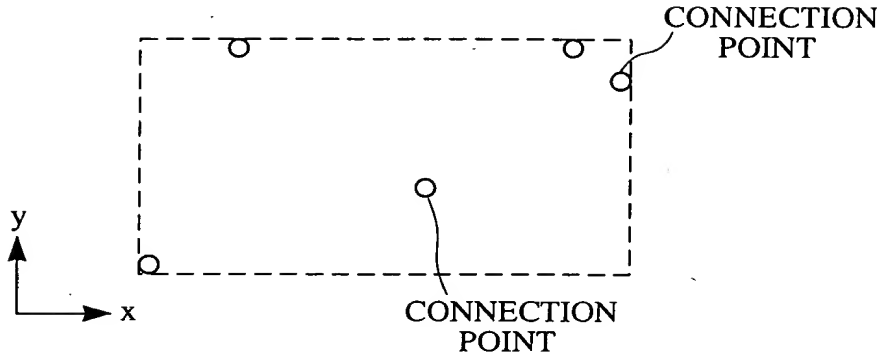

FIG. 13B

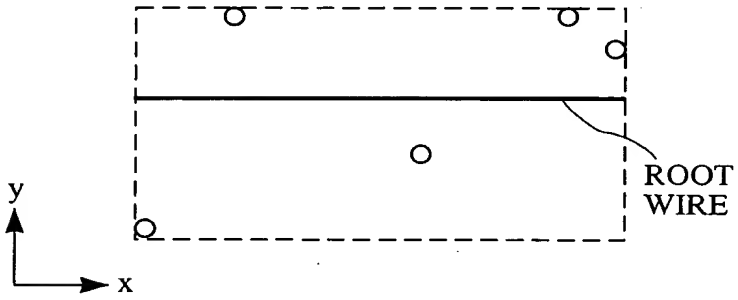

FIG. 13C

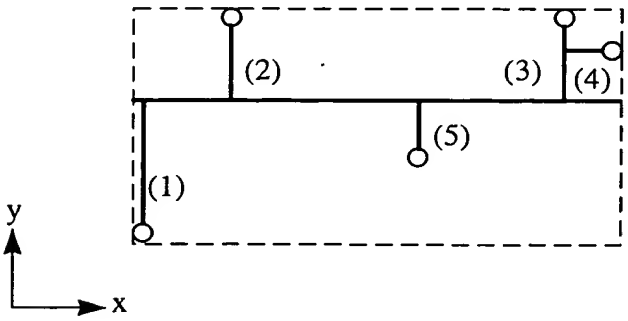

FIG. 14

```
        NAME OF     CAPACITANCE
        SIGNAL        VALUE
          |             |
* | NET  DATAOUT_4_0.742980PE
      CONNECTION  CONNECTION      NAME CAPACITANCE         y-COORDINATE
         NODE        POINT        OF PIN    VALUE               |
          |            |            | IN/OUT |    x-COORDINATE  |
          |            |            |   |    |          |       |
* | 1 (LITE_255.M10 :  A  LITE_255.M10   A   | 0.013360PF -197917 -750000)
* | 1 (LITE_255.M4 :  A  LITE_255.M4   A   | 0.044753PF -197917 -750000)
* | 1 (SAM_HOS_TOP.HOS_HS.HSDAT_reg_4_:Q SAM_HOS_TOP.HOS_HS.HSDAT_reg_4_Q  O  0.000000PF -190740 -328505)
Cg1_30  N138_281_5  0  8.700e_15
Cg2_30  N138_282_127  0  9.744e-14
Cg3_30  N138_282_155  0  9.744e-14
Cg4_30  N138_282_183  0  9.744e-14
Cg5_30  N138_282_211  0  5.923e-14          <===WIRE  RESISTANCE  VALUE
Cg6_30  N138_282_37  0  9.744e-14
Cg7_30  N138_282_65  0  9.744e-14
Cg8_30  N138_282_9  0  5.742e-14
Cg9_30  N138_282_93  0  5.916e-14
Cg10_30  N138_282_99  5  0 9.916e-14
Cg11_30  SAM_HOS_TOP. HOS_HS. HSDAT_reg_4_:Q  0  1.211e-14
R1_30  LITE_255.M10:A  N138_281_5  0.100
R2_30  LITE_255.M4:A  N138_281_5  0.100
R3_30  SAM_HOS_TOP.HOS_HS.HSDAT_reg_4_:Q N138_282_211 16.300
R4_30  N138_282_211  N138_282_183  75.600
R5_30  N138_282_183  N138_282_155  75.600
R6_30  N138_282_155  N138_282_127  75.600
R7_30  N138_282_127  N138_282_99  75.600          <===WIRE  RESISTANCE  VALUE
R8_30  N138_282_99  N138_282_93  16.200
R9_30  N138_282_93  N138_282_65  75.600
R10_30  N138_282_65  N138_282_37  75.600
R11_30  N138_282_373  N138_282_9  75.600
R12_30  N138_282_9  N138_281_5  13.500
```

FIG. 15

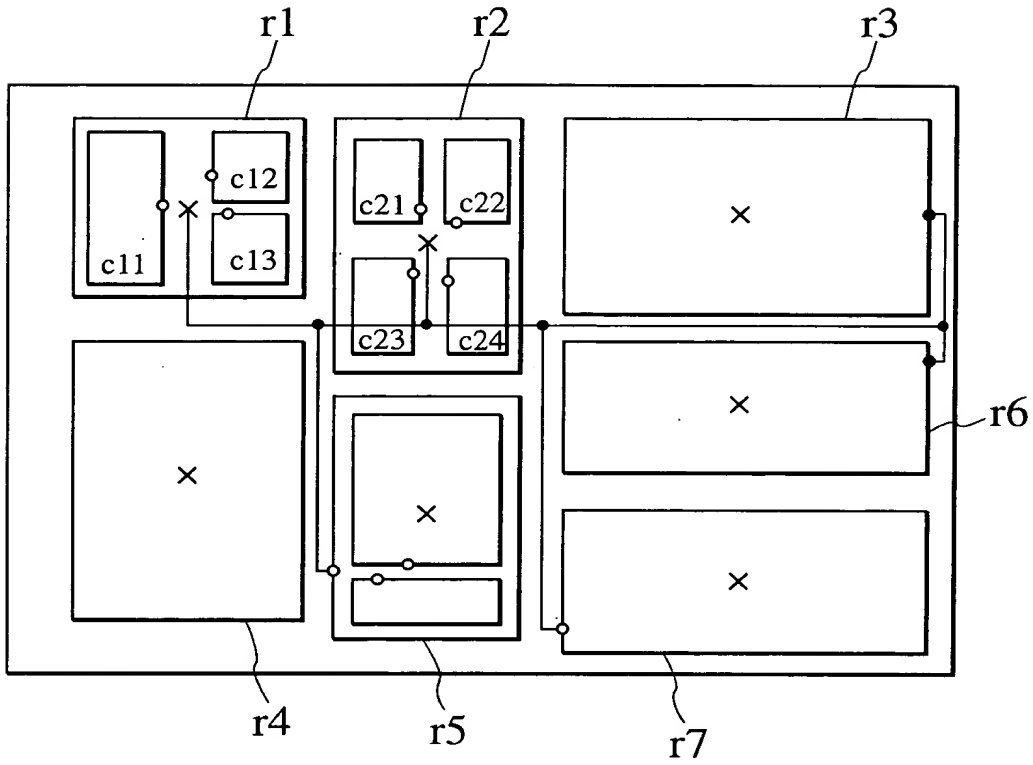

FIG. 16

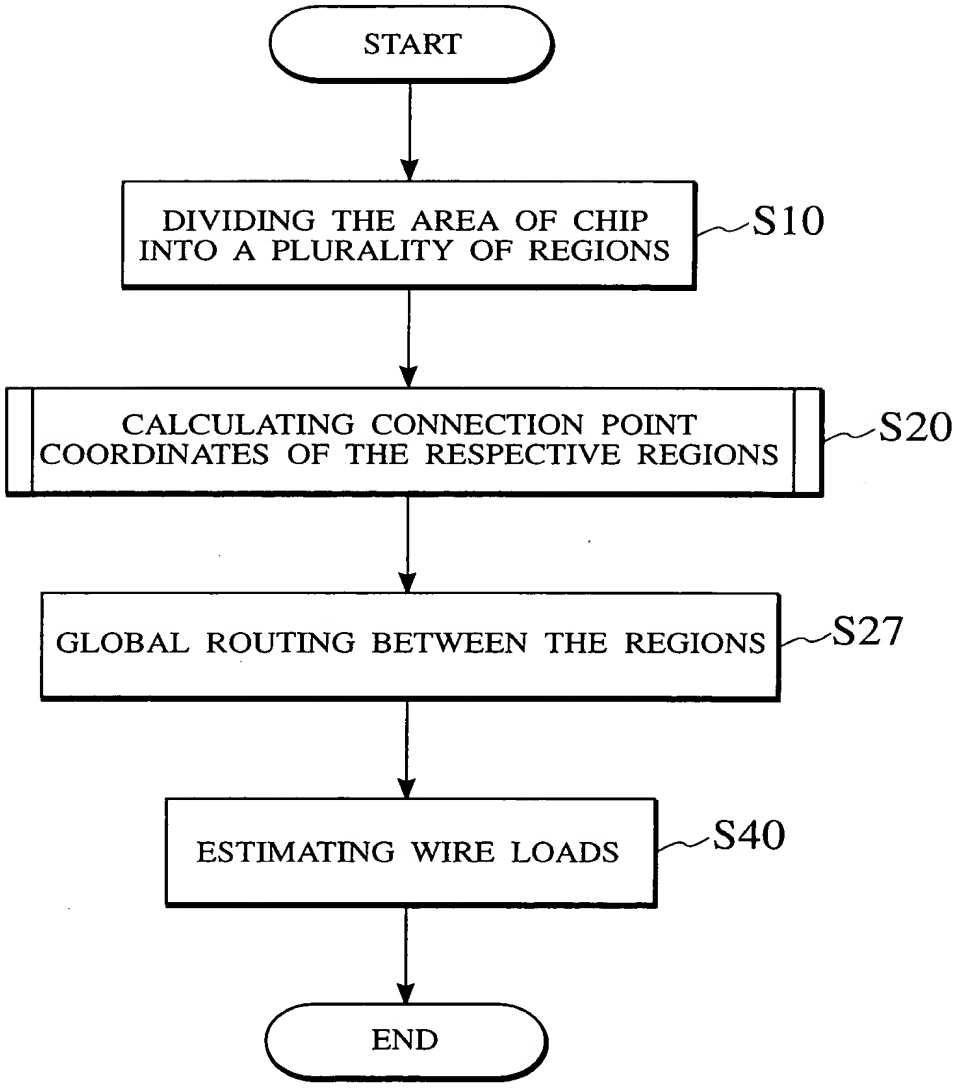
START
DIVIDING THE AREA OF CHIP INTO A PLURALITY OF REGIONS
S10
CALCULATING CONNECTION POINT COORDINATES OF THE RESPECTIVE REGIONS
S20
GLOBAL ROUTING BETWEEN THE REGIONS
S27
ESTIMATING WIRE LOADS
S40
END

FIG. 17A

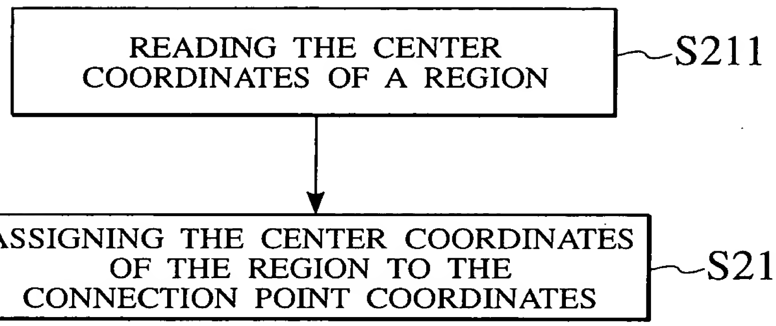

FIG. 17B

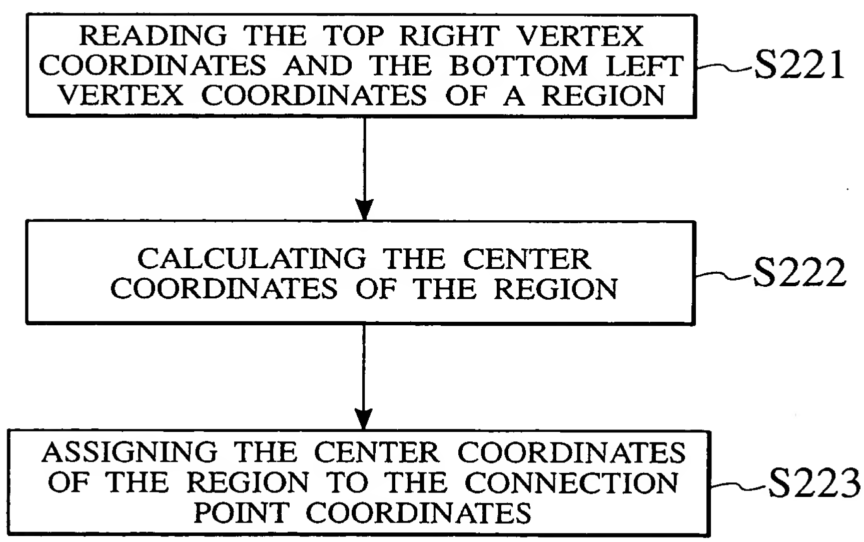

FIG. 18A

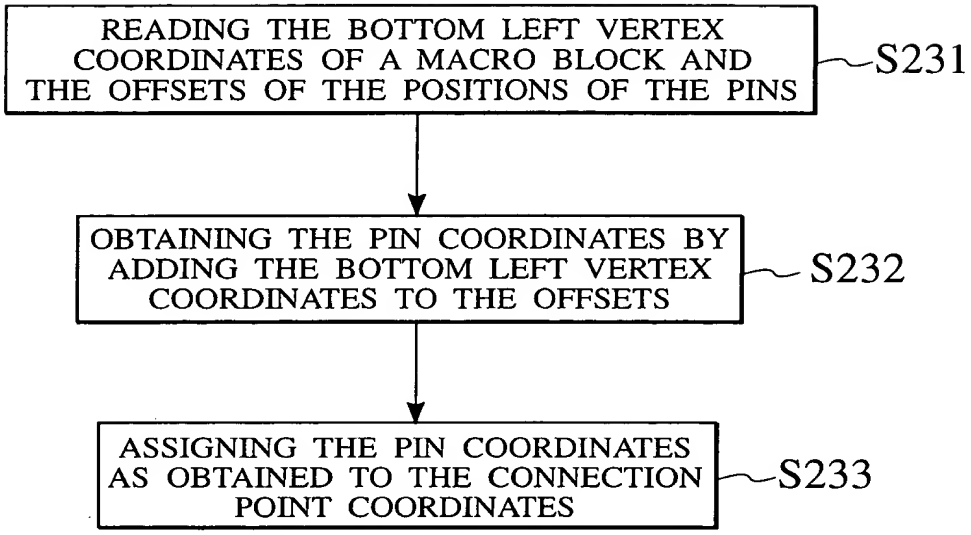

FIG. 18B

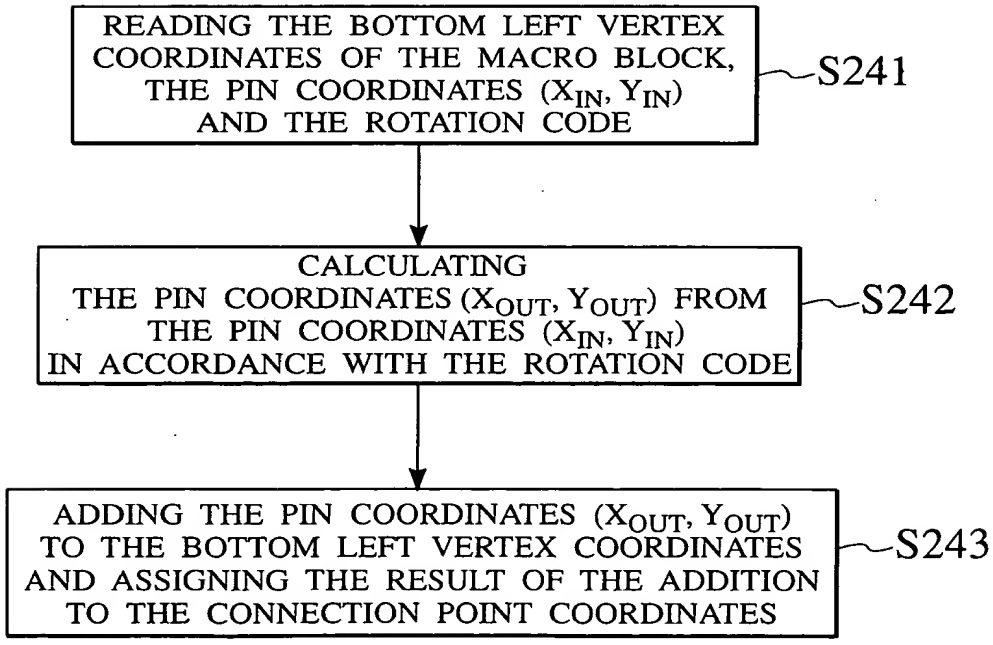

FIG. 19

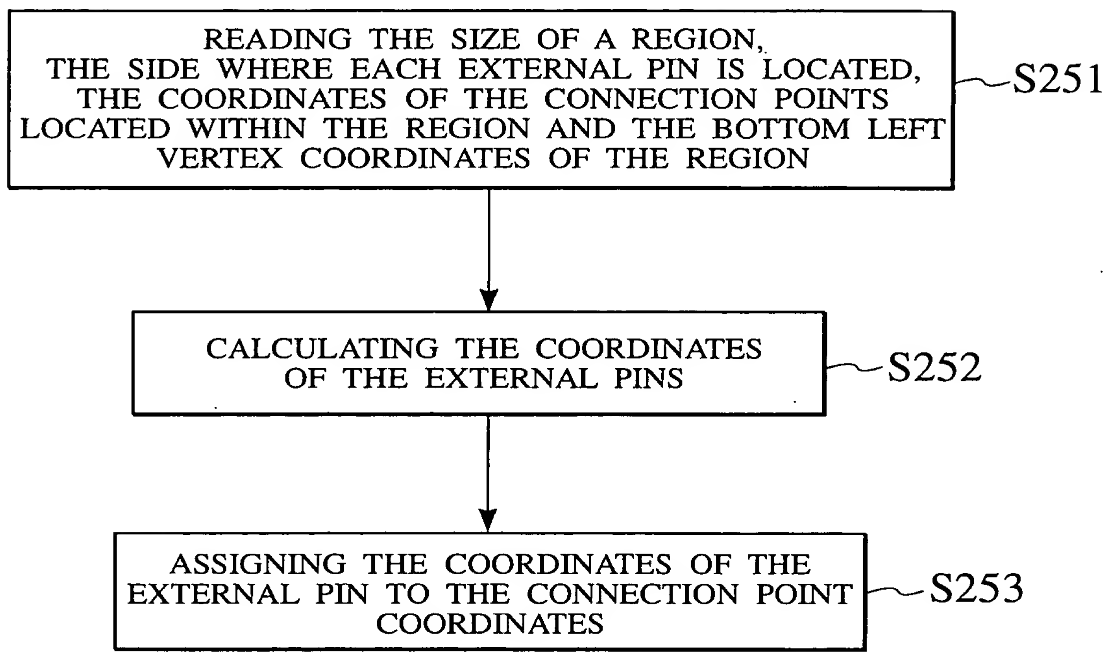
READING THE SIZE OF A REGION, THE SIDE WHERE EACH EXTERNAL PIN IS LOCATED, THE COORDINATES OF THE CONNECTION POINTS LOCATED WITHIN THE REGION AND THE BOTTOM LEFT VERTEX COORDINATES OF THE REGION
S251
CALCULATING THE COORDINATES OF THE EXTERNAL PINS
S252
ASSIGNING THE COORDINATES OF THE EXTERNAL PIN TO THE CONNECTION POINT COORDINATES
S253

FIG. 20

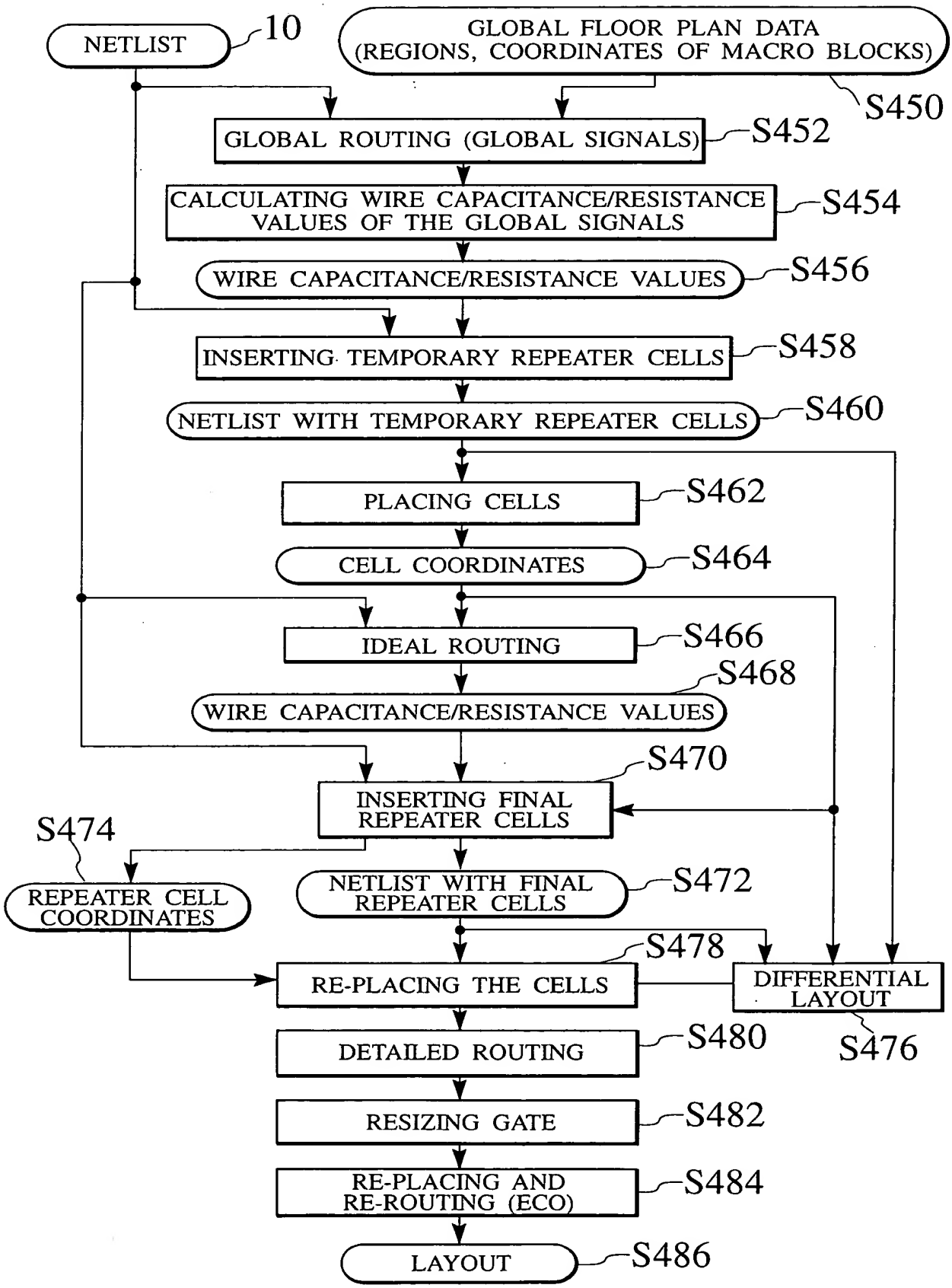

FIG. 21

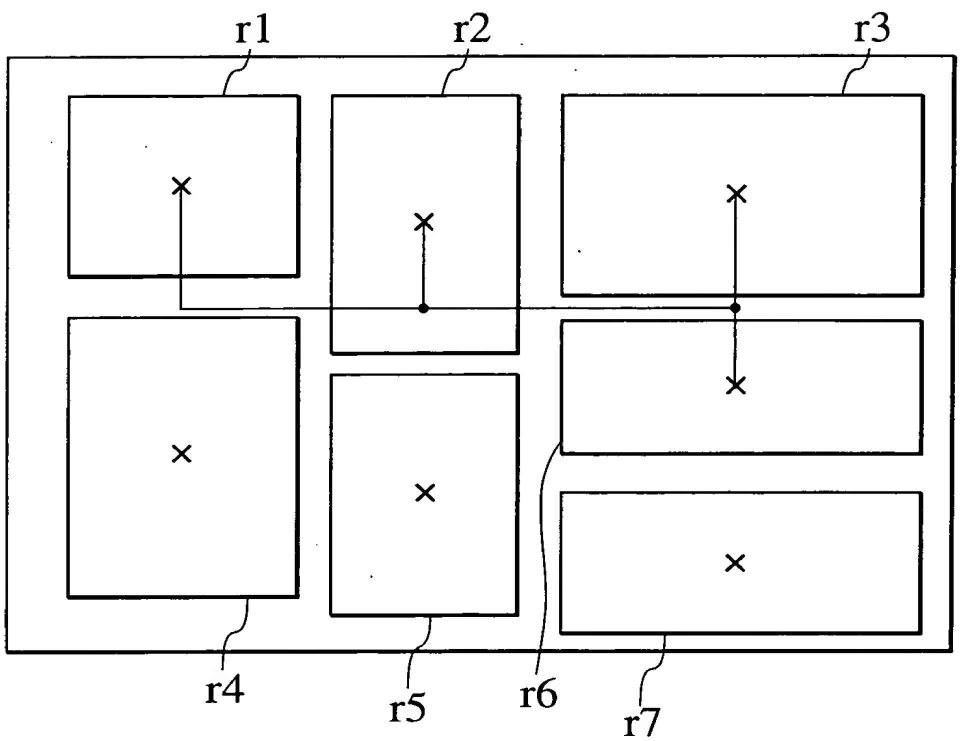

FIG. 22

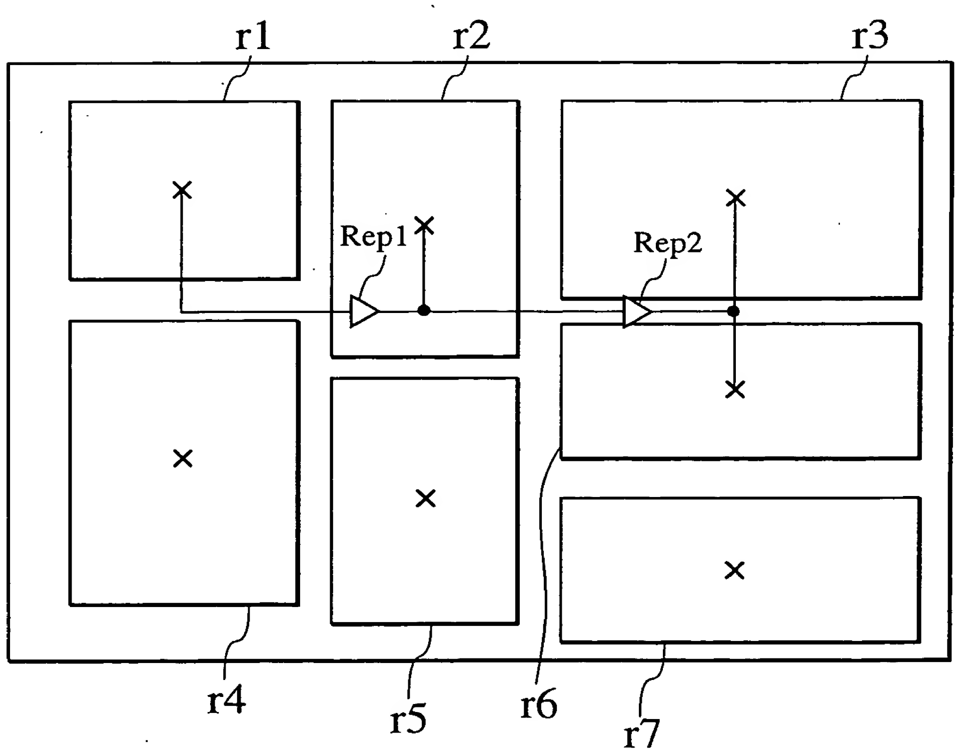

FIG. 23

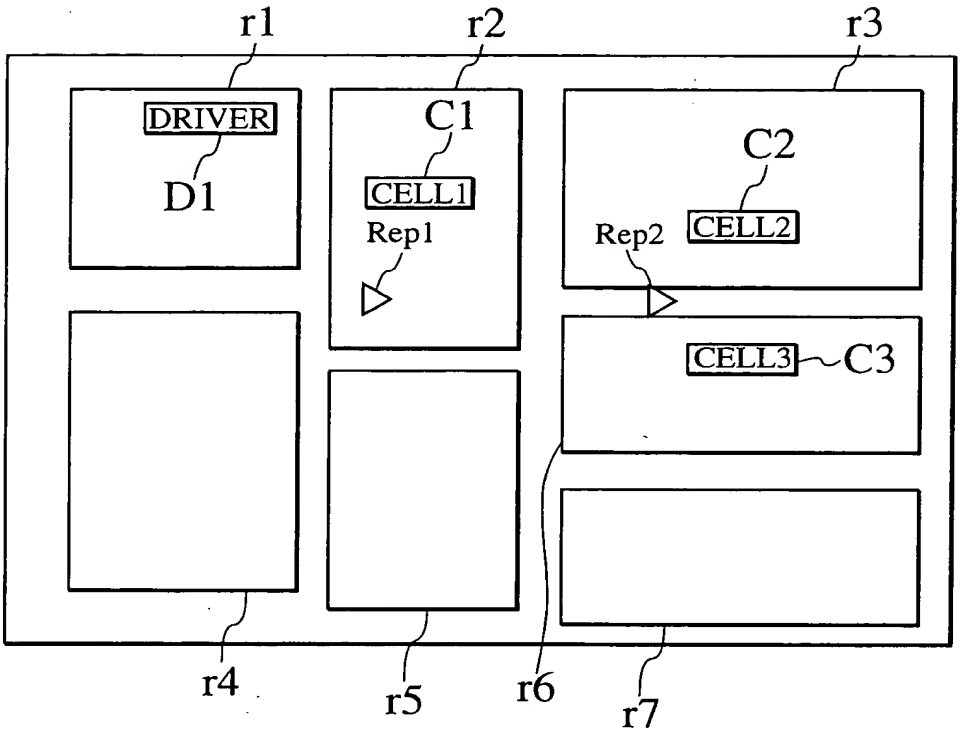

FIG. 24

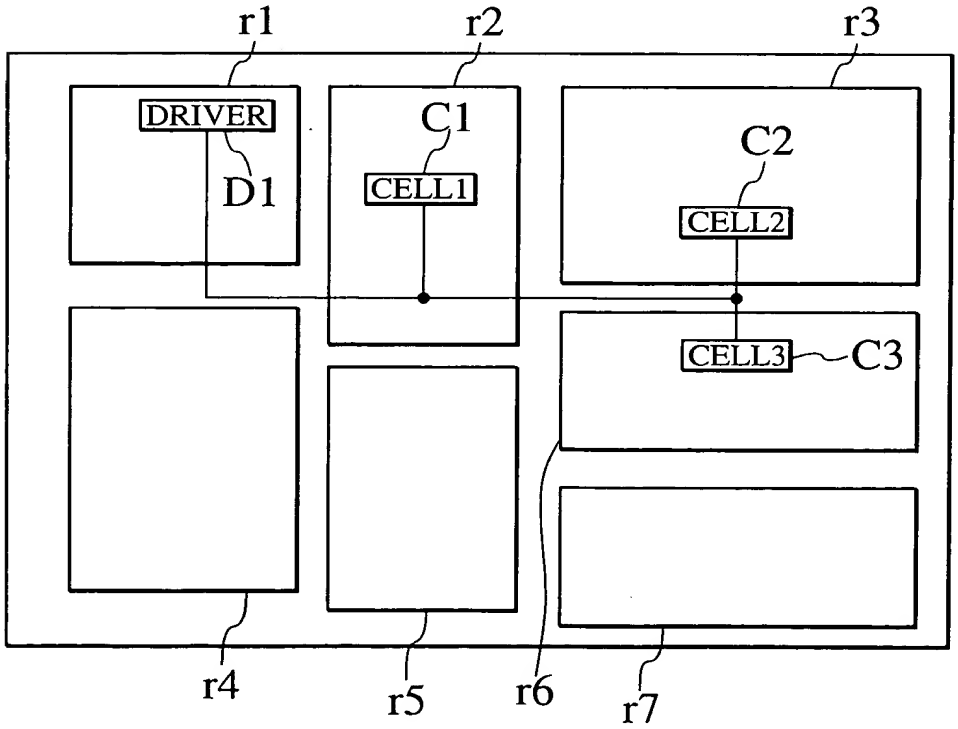

FIG. 25

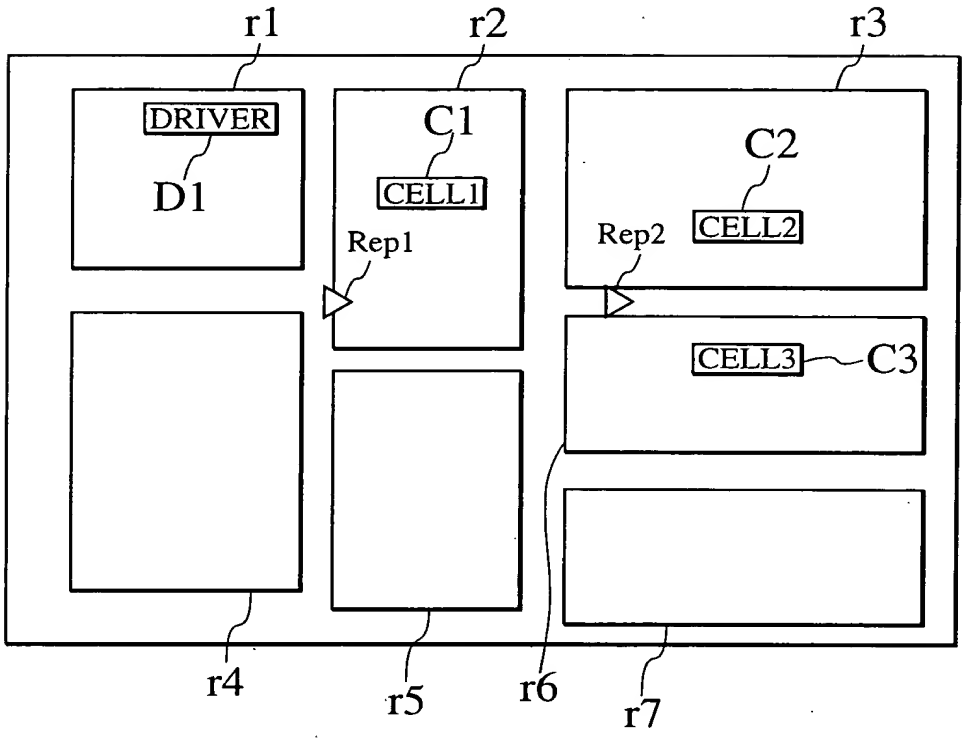

FIG. 26